June 15, 2000 W/OSO321:FJZ

MEMORANDUM FOR: All NWS Regional Headquarters, Regional Maintenance Specialists, Electronic Systems Analysts, and Electronics Technicians (EHB-13 Series II distribution)

FROM: W/OSO3 - John McNulty

SUBJECT: Transmittal Memorandum for Engineering Handbook (EHB)-13 Series II, Issuance 00-06

1. Material Transmitted:

Engineering Handbook No. 13 Series II, Advanced Interactive Processing System (AWIPS), Section 3.0, AWIPS Software Patch Modification Note 4: Patch fo the Central Collection of National Radar Products (P426_APO_A100063).

2. Summary:

AWIPS Software Patch Modification Note 4 provides instruction on installing a software patch to include a national product set to an AWIPS RPS list.

3. Effect on Other Instructions:

None.

EHB-13 Ser II
Issuance 00-06
06/15/00

AWIPS SOFTWARE PATCH MODIFICATION NOTE 4 (for Electronic Systems Analysts)
APO: Ken Hager
W/OSO321: FJZ

SUBJECT : Patch for the Central Collection of National Radar Products (P426_APO_A100063)

PURPOSE : To include a national product set to an AWIPS RPS list.

AFFECTED SITES : All WFOs, Weather Service Headquarters, NHOW, NMTW, and NHDA **must** install this patch by June 22, 2000. RFCs, National Centers, and Regional Offices should **not** install this patch

VERIFICATION STATEMENT : The patch and installation procedures were tested and verified at a Weather Service Headquarters system and at the Jackson, MS (JAN), Sacramento, CA (STO), Shreveport, TN (SHV), and Knoxville, TN (MRX), WFOs.

TIME REQUIRED : Approximately 30-45 minutes

SECURITY LEVEL : root and fxa.

BACKGROUND

This set of patch installation and activation/deactivation procedures is to be used on R4.2.6 and R4.3.1 sites. The patch was developed to support the operational requirements of the Central Radar Server, and allow the NWS to meet NIDS replacement requirements. **The patch is available on the NOAA1 server and must be installed by June 22, 2000 at all sites referred to in the "Affected Sites" section above.** For more information regarding the central collection patch P426_APO_A100063, see the Release Notes, *Distribution of Centrally Collected Radar Products on the SBN* located on OSO3 Web page.
http://www.oso3.nws.noaa.gov/awipsrack/software/r431patches.htm

This Software patch modification note is divided into the following parts:

- Under Part I. General
  - Section A describes the patch files.
  - Section B gives an overview of how the RPS list management process functions under the current configuration and the changes resulting from the patch installation.
- Under Part II. Procedure
  - Section A contains the procedures for downloading and untarring the patch.
  - Section B contains the set-up procedures which must be completed prior to installation. **Note:** Section A and B **do not** affect radar operations, and can be performed without impact to the site.
  - Section C contains the procedures for installing and activating the new patch software. **Note:** Section C **does** affect radar operation and requires the radar processes be stopped. This section should only be performed when weather conditions permit.
  - Section D describes how to update the patch log.
  - Section E pertains to reinstalling the patch following a 4.3.1 upgrade.
  - Section F contains the procedures for uninstalling the patch and restoring the system back to the baseline configuration.

Note: This patch (P426_APO_A100063) adds **new functionality** to the R4.3.1 delivery. Therefore, **it is necessary to reinstall this patch after a R4.3.1 upgrade**. To do this, refer to Section E. Once this patch is installed after a R4.3.1 upgrade, it will not need to be reinstalled.

I. GENERAL

A. Radar Patch Files Description

The tar file includes,

- two executables, “RadarServer” and “RadarStorage,” (replaces the baseline executables),
- an install script “installNidsPatch.sh,”
- an uninstall script “uninstallNidsPatch.sh,”
- an update patch log script, and several configuration files.

The “RadarPatchFiles.dat” file contains a listing of the files which are to be either replaced or added to the baseline. The contents of the “RadarPatchFiles.dat” are as follows:

```
staging /home/ncfuser/radar

system ds1
/awips/fxa/bin/RadarServer
/awips/fxa/data/ingestLogPref.ds1
/data/fxa/nationalData/rps-RPGOP.storm NEW
/data/fxa/nationalData/rps-RPGOP.clear-air NEW
/data/fxa/nationalData/rps-assoc.storm NEW
/data/fxa/nationalData/rps-assoc.clear-air NEW

system as1
/awips/fxa/bin/RadarStorage
/awips/fxa/data/ingestLogPref.as1
/awips/fxa/data/prodList.txt
/awips/fxa/data/radarPattern.txt
/awips/fxa/data/unisysProdIds.txt NEW
```

The file contents identify the directory in which the patch files reside, the primary host machine on which the installation will occur, and the fully qualified path names. New base line files are tagged with the “NEW” identifier. This general format is repeated for each host machine on which baseline files are to be either replaced or added. These files are also replicated on the respective backup host machines for the ds1 and as1 servers during execution of the “installNidsPatch.sh” script.

B. Patch Functionality Overview

The current RPS list management process primarily utilizes three lists, which are located in the **/data/fxa/radar/lists** directory. There are two default mode lists, “KXXX.storm” for precipitation mode and “KXXX.clear-air” for clear air mode. When the “wfoApi” radar processes are started, “RadarServer” determines whether the radar has switched modes. If the radar **did not** switch modes since “RadarServer” restart, the current product set, “KXXX.current”, is sent. If the radar **did** switch modes, “RadarServer” copies the correct default mode RPS list to “KXXX.current,” and sends the list to the RPG. Any time a mode change is detected, “RadarServer” copies the new default mode RPS list to “KXXX.current” and sends the new list to the RPG.

> **Note:** Every time there is a mode change, one of the two default mode RPS lists is copied in its entirety to “KXXX.current.”

After the patch, the Central Collection software will no longer copy a single default mode to "KXXX.current." The "KXXX.current" file will now be created from two lists using a filtering algorithm. When a mode change is detected, the software will retrieve the appropriate national RPS list component. It will then take the correct default mode RPS list, filter out any duplicate products on the national list, and append the non-duplicate products after the national product list. The resulting aggregated list will become the "KXXX.current" list which will be sent to the RPG. If the aggregated list is too large, it will be truncated to the maximum allowed RPS list size before it is copied to "KXXX.current." The entire aggregated list will be copied to "KXXX.bad." The "KXXX.bad" file may be displayed to determine what corrective actions to take, to reduce the size of the aggregated list.

Note: Most sites will experience oversized aggregated "KXXX.current" lists when the patch is first installed. Sites are encouraged to modify their default mode RPS lists in order to ensure that all of the desired products will be in the "KXXX.current" list.

The number of products in the national RPS lists are as follows

RPS List	Number of Products
rps-RPGOP.storm	34
rps-RPGOP.clear-air	21
rps-assoc.storm	24
rps-assoc.clear-air	17

The maximum number of products allowed for a particular modem speed, are given in the table below:

Modem Speed (Kbps)	Number of products
56	50
33.6	50
14.4	31

Once the new Central Collection software executables and data files are pushed out to the appropriate servers, it will be necessary to stop and restart the radar ingest process to activate the “RadarServer” process and generate a new “KXXX.current” RPS list. A mode change must also be initiated to generate a new aggregated “KXXX.current” RPS list to include the national product set.

The Central Collection software reads the “portInfo.txt” file to determine the line speed. If “portInfo.txt” has a maximum product limit of 50 for a particular line, then the software uses the appropriate “rps-RPGOP” national component in building the aggregated “KXXX.current” list. If “portInfo.txt” has a maximum product limit of 31, then the software uses the “rps-assoc” national component. For example, if a site’s radar goes into precipitation mode and AWIPS is connected to the RPG over the 56K line, the software interrogates “portInfo.txt” and finds that the maximum number of products is 50. It retrieves the appropriate “rps-RPGOP” national component (in this case the “.storm” list), retrieves the “KXXX.storm” default list, filters out any duplicates, and appends the non-duplicate products to the end of the national component. The Central Collection software uses “wmoSiteInfo.txt” file to determine what radars require a national component.

Once the aggregated list is generated, the software verifies whether the 50 product limit was exceeded. If product limits was not exceeded, the aggregated list is copied to the “KXXX.current” and sends it to the RPG. If the aggregated list exceeds 50 products, the software truncates the list down to 50 products, copies the truncated list to “KXXX.current,” sends it to the RPG, and copies the untruncated aggregated list to “KXXX.bad”. In the event the aggregated list exceeds the 50 product limit, the contents of “KXXX.current” file should be compared to the contents of “KXXX.bad,” to determine which products were truncated. The “KXXX.storm” must be edited so as not to exceed the 16 non-duplicate products (the 50 products allowed over a 56K line minus the 34 products in the “50 product” national component). The software checks for a value of 50 (for 56K or 33.6K modems) or a value of 31 (for 14.4K modems) in the “portInfo.txt” file.

Note: The “portInfo.txt” file must contain a product value of either 50 or 31. The software will fail for any other value.

II. PROCEDURE

A. Patch Downloading Procedure

The tar file **radarPatch.tar.Z** , available on the NOAA1 server, contains an install and uninstall script, a patch log update script, two executables, several configuration files, and a file listing the radar patch files. To download the tar file and to extract the archived files, perform the following procedure:

NOTE: This installation procedure requires the user to alternate between **root** and **fxa**. Ensure the correct user is logged in.

1. At a workstation, open a Telnet session and log into ds1 as **root**.

2. Change to the **/home** directory and change the write permissions on the **/ncfuser** subdirectory by typing:

   cd /home
   chmod 777 ncfuser

3. Change user to **fxa** by typing:

   su - fxa

4. Change to the **/home/ncfuser** directory by entering the following command:

   cd /home/ncfuser

5. If the **ncfuser** subdirectory does not exist under the **/home** parent directory (the message "`/home/ncfuser: No such file or directory`" is displayed on the screen), create the subdirectory by entering the following commands:

   cd /home
   mkdir ncfuser

NOTE:	If the **/ncfuser** subdirectory is missing contact the NCF to open a trouble ticket.

6. At the prompt, change to the **/ncfuser** subdirectory by typing:

   cd ncfuser

7. Initiate an ftp session to the NOAA1 FTP Server by typing:

   ftp 165.92.30.15

8. Once connected, log in as **ftp** user with a password of **4Awips!**

9. Retrieve the tar file from the **/tmp** directory and end the Telnet session by typing:

   cd /tmp
   get radarPatch.tar.Z
   bye

10. From the **/home/ncfuser** directory, restore the compressed archived files and create a radar subdirectory with compressed archived files by typing:

    gzip -d radarPatch.tar.Z
    tar xvf radarPatch.tar

11. Remove the tar file from the **/home/ncfuser** directory by typing:

    rm radarPatch.tar

NOTE:	Do not remove the radar patch files stored in the **/home/ncfuser/radar** directory. Subsequent reinstallations will reference the radar patch files to this directory.

B. Patch Pre-Installation Set-Up Procedures

1. Identify the site's ingest ID by typing the following command on ds1 as user **fxa**:

   echo $FXA_INGEST_SITE

   The returned value, <ingest_site_id>, is entered as "XXX" in the following steps.

2. Identify which of the site's dedicated radars are subject to Central Collection by typing:

   cd /awips/fxa/data
   more wmoSiteInfo.txt

   Scan down the leftmost column and locate the site's line entry. The site's dedicated radars will be displayed to the right (minus the leading k, p, or t). For each of the radars listed, a "Y" in the fourth character position indicates the products from the respective radar will be subject to Central Collection. An "N" in the fourth position means the site is not responsible for sending products from the respective radar back to Central Collection.

   All of the site's dedicated radars should be included in the "wmoSiteInfo.txt" entry. If a dedicated radar connected to AWIPS is **not** in the "wmoSiteInfo.txt" file, the file may be outdated. Use the procedure below to download the most current version from the NOAA1 server.

   a. Rename the existing version of "wmoSiteInfo.txt" by typing:

      mv wmoSiteInfo.txt wmoSiteInfo.txt.old

b. Initiate an ftp session to the NOAA1 FTP Server by typing:

ftp 165.92.30.15

c. Once connected, log in as **ftp** user with a password of **4Awips!**

d. Retrieve the new file from the **/awips/fxa/data** directory and end the Telnet session by typing:

cd /awips/fxa/data
get wmoSiteInfo.txt
bye

Display the new "wmoSiteInfo.txt" file and inspect the line entry for your site. All of the site's dedicated radars should be listed on the right side of the line entry. If a dedicated radar is missing from the new "wmoSiteInfo.txt" file, **do not proceed** with the installation of this patch. **Contact the OSF Hotline immediately and inform them of the missing dedicated radar in the AWIPS "wmoSiteInfo.txt" file.**

NOTE:	Do not continue with the installation of the patch until this discrepancy is resolved.

3. Verify the "portInfo.txt" contains the correct maximum number of products for the site's modem line speeds (refer to Part I Section B).

cd /awips/fxa/data/localizationDataSets/XXX
more portInfo.txt

Note the name(s) of the radar(s) and the maximum number of products allowable for the line speed. Verify the radars contained in the "portInfo.txt" file are consistent with the radars contained in the "wmoSiteInfo.txt" file in Step 2 above. If the files are not consistent, go back to Step 2 and download the latest version of "wmoSiteInfo.txt" from the NOAA1 server, or call the OSF Hotline and open a Trouble Ticket.

NOTE:	If the "portInfo.txt" file and "wmoSiteInfo.txt" file are not consistent, products from the missing radar will no longer be received once the patch is installed.

4. If necessary, edit the "portInfo.txt" file so that the maximum number of products is **50 for a 56K or 33.6K line** and **31 for a 14.4K line**. Ensure the maximum number of products is set to either 50 or 31 for all of the radars listed; **including the radars not subject to Central Collection**.

NOTE: For sites with the “portInfo.txt.144" and a “portInfo.txt.56" should ensure these files also reflect the 50 and 31 product sizes.

5. If the “portInfo.txt” was edited in step 4 above, ensure the “XXX-portInfo.txt” file in the **/awips/fxa/data/localization/XXX** directory reflects the same number of products.

6. The installation script will copy the following three files from ds1 to ds2, as1, and as2 regardless if they were edited. This will ensure common files on all servers.

   /awips/fxa/data/localizationDataSets/XXX/porInfo.txt
   /awips/fxa/data/localization/XXX/XXX-portInfo.txt
   /awips/fxa/data/wmoSiteInfo.txt

7. Change to the directory where the default mode and current RPS list files are located by typing:

   cd /data/fxa/radar/lists

8. For each of the dedicated radars verified for Central Collection in Step 2 above, create a backup copy of the existing default list by typing:

   cp KXXX.storm /data/fxa/rps-lists/KXXX.storm.orig
   cp KXXX.clear-air /data/fxa/rps-lists/KXXX.clear-air.orig

This completes the pre-installation set-up procedure.

C. Patch Installation and Activation Procedures

Stopping the “RadarServer” on ds1 and “RadarStorage” on as1:

1. On **ds1** as user **fxa**, identify the process id of the active “RadarServer” process by typing:

   ps -ef | grep RadarServer

2. Note the process id of **26605** returned from the above command.

```
fxa     26605   1   0 May 15   ?    0:24   /awips/fxa/bin/RadarServer
```

3. Using the process id from step 2 above, shut down the “RadarServer” process by typing:

   kill -9 26605

4. On **as1** as user **fxa**, shut down the ingest processes by typing:

   stopIngest.as1

Central Collection patch installation:

5. On **ds1** as user **fxa**, install the patch in the **/home/ncfuser/radar** directory by typing:

   ./installNidsPatch.sh

   A notice will display indicating the original files will be saved under the same filename but with an AWIPS release number extension.

6. Respond to the following questions:

   Do you wish to proceed with the install? [y/n]
   Action: To proceed, please enter: **y** and a carriage return.

The installation will take approximately 1-3 minutes.

Start the new “RadarServer” and “RadarStorage” processes:

7. On **ds1** as user **fxa**, restart the “RadarServer” process by typing:

   /awips/fxa/bin/RadarServer &

8. On **as1**, restart the ingest process by typing:

   startIngest.as1

Central Collection activation:

9. For each radar subject to Central Collection (as verfied in Step 2 above), command the radar into a mode change (e.g., if it is currently in clear air mode, command it to storm mode; or vice versa). This will cause the new Central Collection software to generate a new aggregated “KXXX.current” RPS list and send it to the RPG. **The mode change must be commanded from the WSR-88D Unit Control Position (UCP), not from AWIPS.**

Post-installation/activation monitoring:

10 Change to the **/data/fxa/radar/lists** directory and execute the following command for each of the Central Collection radars:

ll KXXX.*

11. Display the contents of the "KXXX.current" file and verify that it contains the correct national component, and the proper non-duplicate products from the default mode RPS list. If a "KXXX.bad" file was generated, display its contents and compare it to the "KXXX.current" file to determine which non-duplicate products were truncated. Edit the default mode rps list as necessary to ensure the number of non-duplicate products do not cause the aggregated list to exceed the maximum allowable number of products for the modem line speed. (see *Release Notes, Distribution of Centrally Collected Radar Products on the SBN, May 24, 2000*)

12. The RPS lists for the radars which are NOT subject to Central Collection should not be affected by this patch. For each of those radars, verify that the "KXXX.current" RPS list does NOT include a national component. The "KXXX.current" file should be identical in content to either "KXXX.storm" or "KXXX.clear-air" depending on the radar's current operating mode.

13. Once the new "RadarServer" and "RadarStorage" processes are activated, the site will begin receiving the national set of radar products, and distributing the products on the AWIPS WAN in both clear air and precipitation modes.

14. After every mode change (as performed in Step 9 above), the new Central Collection software should automatically generate new aggregated lists. Sites should perform Steps 9 and 10 above for several days following installation of the new patch to ensure that the RPS lists are being generated correctly whenever the radar(s) alternate between clear air and precipitation modes.

D. PatchLog File Update

Use the following steps to update the **/awips/PatchLog** file using the update patch log script, P426_APO_A100063.sh. The script must be run as **root** from the **/home/ncfuser/radar** directory.

1. If this patch is being installed at an R4.2.6 or R4.31 site for the first time, type:

cd /home/ncfuser/radar
./P426_APO_A100063.sh -i

2. Respond to the following questions as indicated:

   a. Do you wish to continue? [y/n]
      Action: To proceed, please enter: **y** and a carriage return.

   b. You can view additional entries in patch log for APO.
      Would you like to do this? [y/n]
      Action: Please enter: **n** and a carriage return.

   c. Do you wish to proceed with the patch log update? [y/n]
      (**NOTE:** Exit only if the Patch ID is not correct or, if encountering a problem while the patch install/uninstall script is running.)
      Action: To proceed, please enter: **y** and a carriage return.

   d. Please enter your name [Example: John Doe]:
      Action: enter your name.

   e. Please enter your telephone number (with area code and ext):
      [Example: (301) 556-1212 x 119]
      Action: enter your phone number.

   f. Do you wish to update patch log with this line? [y/n]
      (**NOTE:** If n is entered, the script will exit without updating the patch log. Exit only if an incorrect entry is displayed in the line above.
      Action: To complete the patch log update, enter: **y** and a carriage return.

3. If the patch was reinstalled (i.e. after a R4.3.1 upgrade), type:

   cd /home/ncfuser/radar
   ./P426_APO_A100063.sh -a

4. Respond to the following questions as indicated:

   a. Do you wish to continue? [y/n]
      Action: To proceed, please enter: **y** and a carriage return.

   b. You can view additional entries in patch log for APO.
      Would you like to do this? [y/n]
      Action: Please enter: **n** and a carriage return.

   c. Do you wish to proceed with the patch log update? [y/n]
      (**NOTE:** Exit only if the Patch ID is not correct or, if encountering a problem while the patch install/uninstall script is running.)
      Action: To proceed, please enter: **y** and a carriage return.

d. Please enter your name [Example: John Doe]:
Action: enter your name.

e. Please enter your telephone number (with area code and ext):
[Example: (301) 556-1212 x 119]
Action: enter your phone number.

f. Do you wish to update patch log with this line? [y/n]
(**NOTE:** If n is entered, the script will exit without updating the patch log. Exit only if an incorrect entry is displayed in the line above.
Action: To complete the patch log update, enter: **y** and a carriage return.

5. Report the completed modification on a WS Form A-26 as outlined in the "Reporting Modification" section at the end of this software note.

E. Patch Reinstallation After a R4.3.1 Installation

1. If the patch is installed on a R4.2.6 system and the system was upgraded to R4.3.1, the patch must be reinstalled. It is not necessary to reinstall the patch after a R4.3.2 or R4.3.3 upgrade.

2. To reinstall the patch, display the contents on ds1 in the **/home/ncfuser/radar** directory and check for the files from the original download.

3. If the patch files are no longer present in the **/home/ncfuser/radar** directory, begin the reinstallation process by downloading the tar file from the NOAA1 server using the procedures contained in Part II Section A (Patch Downloading Procedure).

4. Once the files are on the system, begin the reinstallation process outlined Part II Section B (Patch pre-installation Set-up Procedures). The 4.3.1 upgrade includes downloading a new version of "wmoSiteInfo.txt" from the NOAA1 Server and a relocalization. Ensure the contents of the "portInfo.txt" file are consistent with "wmoSiteInfo.txt" file as described in Part II Section B Step 3. It is not necessary to save the default mode RPS lists as described in Part II Section B Steps 7 and 8.

This completes the patch reinstallation procedure.

F. Patch Deactivation/Uninstall Procedures

The uninstall procedures are only provided in the event of an emergency. Executing this script will remove all new baseline files added to the baseline, and restore the original files.

1. To restore the baseline files, the "RadarServer" and "RadarStorage" processes must be brought down prior to executing the "uninstallNidsPatch.sh script." The "uninstallNidsPatch.sh" script renames the files saved in Part II Section C Step 5.

NOTE:	If the uninstall script is executed prior to stopping the "RadarServer" and "RadarStorage" processes, the script will be unable to replace the executables.

2. To stop the "RadarServer" and "RadarStorage" processes, perform the commands described in Section C, Steps 1-4.

3. Execute the uninstall script by typing:

   ./uninstallNidsPatch.sh

Script execution will take approximately 1.5 - 3 minutes. All files with "NEW" specifier located in **/home/ncfuser/radar/RadarPatchFiles.dat**, will be removed from both the primary and the backup servers.

This completes the patch deactivation/uninstall procedure.

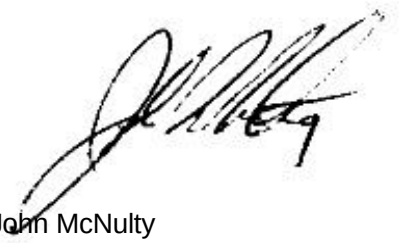
REPORTING MODIFICATION

Report the completed modification on a WS Form A-26 according to instructions in Engineering Handbook 4 (EHB-4), Part 2, and in EHB-4, Appendix H. A sample A-26 form is attached. As an additional guide use the verbiage in the information column.

Block #	Block Type	Information
5	Description	Perform Modification I.A.W. Software Patch Modification Note 4
7	Equipment Code	AWIPS
8	Serial Number	001
15	Comments	Upgrade System Software with patch P426_APO_A100063
17a	Mod. No.	SP4

TECHNICAL ASSISTANCE

For questions or problems regarding the installation instructions or running the Central Collection patch software, please contact the NCF at (301) 713-1288.



John McNulty
Chief, Engineering Division

Attachment

ATTACHMENT

WS FORM A-26 (4/94)

WS FORM A-26 (4/94)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE

ENGINEERING MANAGEMENT REPORTING SYSTEM
MAINTENANCE RECORD

Document Number: **G 49978**

General Information	**1.** Open Date: **5 / 26 / 00**	Time: **0900**	**2.** Initials: **JMM**	**3.** Response Priority (check one): ○ Immediate ○ Routine ○ Low ☒ Not Applicable	**4.** Close Date: **5 / 26 / 00**	Time: **1000**

5. Description

Perform Modification I.A.W. AWIPS Software Patch Mod Note 4

Equipment Information	**6.** Station ID	**7.** Equipment Code	**8.** Serial Number	**9.** TM	**10.** AT	**11.** How Mal.
	CTP	**AWIPS**	**001**	**M**	**M**	**999**

12. ***EQUIPMENT OPERATIONAL STATUS TIMES***	**a. Fully Operational**	**b.** Logistics Delay	**Partly Operational**	**c.** All Other	**d.** Logistics Delay	**Not Operational**	**e.** All Other

13. ***Parts Failure Information***

Block #	a. ASN	b. NSN	c. TM	d. AT	e. How Mal.	f. Qty.	g. Maint. Hrs.
1							
2							
3							
4							
5							

14. ***Work Load Information***

Type	Staff Hrs.
a. Routine	
b. Non-routine	
c. Travel	
d. Misc.	**1:00**
e. Overtime	

Miscellaneous Information	**15.** Maintenance Comments	**16.** Initials
	Update AWIPS System software with Central Collection of National Radar Products Patch (number P426_APO_A100063)	**JMM**

17. ***SPECIAL PURPOSE REPORTING***	**a.** Mod. No.	**b.** Mod./Act./Deact.Date	**c.**	**d.**	**e.**
	SP4	**5/26/00**			

18. ***CONFIGURATION MGMT. REPORTING*** *(use as directed)*	**ASN**	Vendor Part Number (New Part)	Serial Number (Old Part)	Serial Number (New Part)